

REMARKS

Claims 1-37 are pending herein, with Claims 1, 11, 27, and 28 being independent claims. All claims stand rejected. Responsive to each paragraph of the Office Action, the Applicant has the following remarks:

35 U.S.C. §112:

Claim 10 was rejected under 35 U.S.C. §112, second paragraph, as having an insufficient antecedent basis for the limitation "airflow delivery device." This has been corrected.

35 U.S.C. §102(b):

Claims 1-5, 9, and 28-31 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,729,931 to Grimble. Grimble was described as showing a fuel cell power system with a fuel cell stack having a manifold and a recuperator where heat is exchanged.

The Applicant respectfully traverses the rejection of independent Claim 1 and the dependent claims thereon, Claims 2-5 and 9. The Applicant traverses the rejection because, among other reasons, Grimble does not show "a fuel cell stack having a manifold wherein heat is exchanged between a fuel fluid and an oxidant fluid." Rather, Grimble shows inlet air passing through an air feed tube 6 into a solid oxide fuel cell 5. The air is reacted within the cell 5 once the air reaches the bottom of the feed tube 6.

Fuel enters through an aperture 8 in a fuel plenum 9 and reacts with the cell 5. The spent fuel and the spent air are then mixed, in part, in an exhaust plenum 7.

As such, Grimble shows nothing more than the typical operation of a fuel cell, at least until the recuperator 7 is reached. Specifically, Grimble does not show exchanging heat between the fuel fluid and the oxidant fluid in a manifold as is claimed herein. Rather, the oxidant inlet 6 and the fuel inlet 8 are on opposite side of the cell. The fuel fluid and the oxidant fluid simply react along the cell 5 in a conventional fashion. The Applicant therefore asserts that claims are patentable over the cited reference.

The Applicant further traverses the rejection of independent Claim 28 and the dependent claims thereon. Claim 28 recites a method of power generation including the steps of combusting an exhaust gas from the fuel cell stack, exchanging a first heat between the exhaust gas and an oxidant fluid, and exchanging a second heat between a fuel fluid and the oxidant fluid. The Applicant respectfully traverses the rejection because Grimble does not show, among other things, exchanging a second heat between a fuel fluid and an oxidant fluid. As described above, the oxidant fluid and the fuel fluid never come into heat transfer contact with one another within a manifold. Specifically, the oxidant inlet 6 and the fuel inlet 8 are on opposite side of the cell. As such, the fluid streams cannot exchange heat in this configuration.

35 U.S.C. §102(e):

Claims 11-16, 20, and 21 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,503,243 to Schuler. Schuler was described as showing a

fuel cell system with a first interior cavity (25) and a second interior cavity (6). The oxidant and gas flows are described as being separated by an electrochemically active plate and heat is exchanged between the fluid flows by means of an interconnector.

The Applicant has amended the claim to specify that the first fluid is delivered through the first flow orifice from the first interior cavity and the second fluid is delivered through the second flow orifice from the second interior cavity. In the case of Schuler, no fluid is delivered from what was described as the "second interior cavity 6". Rather, element 6 is the afterburner chamber. Instead, the fluid is delivered via a supply line 81 from outside the sleeve 3, i.e., outside the manifold. The Applicant thus asserts that the amendment overcomes the rejection.

The Applicant further traverses the rejection of dependent Claim 12 concerning a feed tube disposed within the second interior cavity that provides fluid communication between the first interior cavity and the first flow orifice. As is shown in Fig. 2, the supply line 81' leads directly to the interconnect 22 as opposed to the first interior cavity 25.

The Applicant further traverses the rejection of dependent Claim 11 concerning the first interior cavity receiving the fuel and a second interior cavity receiving an oxidant. As is shown in Fig. 2, the second interior cavity 6 is the afterburner chamber. There is no fluid flow from this "second chamber".

35 U.S.C. § 103:

Claims 6, 10, 27, and 33-35 were rejected under 35 U.S.C. §103(a) as being unpatentable over Grimble in view of U.S. Patent Application No. 2003/0022050 A1 to Barton, et al.

The Applicant respectfully traverses the rejection of dependent Claim 6 concerning a fuel storage tank in communication with a fuel vaporizer, a pressure relief valve, and an airflow delivery device for the reasons described above with respect to Claim 1. The Applicant further traverses the rejection on the grounds that the storage tank is not in fluid communication with a fuel vaporizer. The Applicant respectfully traverses the rejection of dependent Claim 10 for the reasons described above.

The Applicant further traverses the rejection of independent Claim 27. Claim 27 concerns a fuel cell stack with a manifold, a catalytic partial oxygen fuel reformer, a fuel vaporizer, a combustion chamber, a recuperator, a thermal enclosure, a fuel cell tank, a pressure relief value, and an airflow delivery device. The Applicant traverses the rejection for numerous reasons including those described above with respect to Claim 1. Specifically, the cited references do not show a fuel cell stack having a manifold wherein heat is exchanged between a fuel fluid and an oxidant fluid. Rather, Grimble simply shows the usual fuel cell reaction.

The Applicant respectfully traverses the rejection of dependent Claims 33-35 for the reasons given above with respect to Claim 28.

35 U.S.C. § 103(a):

Claims 7, 8, 36, and 37 were rejected under 35 U.S.C. §103(a) as being unpatentable over Grimble in view of U.S. Patent No. 4,087,076 to Morrow, Jr., et al. Morrow was described as showing multi-layer radiation shields in a vacuum. The Applicant respectfully traverses the rejection for the reasons given above with respect to Claim 1 and Claim 28. The Applicant further traverses the rejection of dependent Claim 7 concerning the use of a vacuum vessel. It is not clear how the open apertures 8, 10, 12 of Grimble could accommodate the use of a vacuum chamber as is shown in Morrow. The Applicant thus submits that there is no suggestion to combine the references or that such a combination be operable. The Applicant respectfully traverses the rejection of Claim 36 for the same reasons.

35 U.S.C. § 103(a):

Claims 18 and 19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Schuler. Claims 18 and 19 concern the use of solid oxide fuel cells and proton exchange membrane fuel cells. The Applicant respectfully traverses the rejection for the reasons given above with respect to Claim 11 and on the grounds that the use of such cells cannot be considered inherent in the disclosure of Schuler. Although Schuler describes the use of "high temperature" fuel cells, the use of such is not sufficient to establish inherency. See MPEP §2112. Rather, the reference must show that the use of such cells necessarily flows from the teaching of the applied prior art.

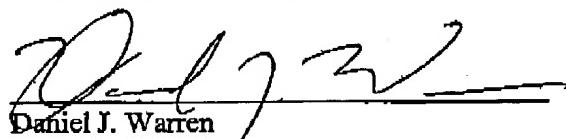
35 U.S.C. § 103(a):

Claims 17-19 and 22-27 were rejected under 35 U.S.C. §103(a) as being unpatentable over Schuler in view of U.S. Patent No. 6,291,089 to Piascik, et al. The Applicant respectfully traverses the rejection of dependent Claim 17 for the reasons described above with respect to Claim 11. The Applicant respectfully traverses the rejection of Claims 18 and 19 for the reasons described above with respect to Claim 11 and in the above paragraph. The Applicant respectfully traverses the rejection of dependent Claims 22-27 for the reasons described above with respect to Claim 11. The Applicant further traverses the rejection of independent Claim 27 for the reasons described above.

CONCLUSION

The Applicant believes it has responded to each matter raised in the Office Action. Any questions may be directed to the undersigned at 404.853.8028.

Respectfully submitted,



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